NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date:

Region: Raleigh Regional Office
County: Chatham
NC Facility ID: 1900015
Inspector's Name: Steven Carr
Date of Last Inspection: 05/26/2016
Compliance Code: B / Violation - emissions

Facility Data

Applicant (Facility's Name): Arauco Panels USA, LLC

Facility Address:
Arauco Panels USA, LLC
985 Corinth Road
Moncure, NC 27559

SIC: 2493 / Reconstituted Wood Products
NAICS: 321219 / Reconstituted Wood Product Manufacturing

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 02D .0512, 02D .0515, 02D .0516, 02D .0521, 02D .0530, 02D .0614, 02D .1111, 02D .1806, and 02Q .0317
NSPS: No
NESHAP: MACT Subpart DDDD
PSD: Yes – PM2.5, PM10, and NOx
PSD Avoidance: No
NC Toxics: No
112(r): No
Other: N/A

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Yvonne Couts Environmental Coordinator (919) 545-5848 985 Corinth Road Moncure, NC 27559	Henry Scheller MDF Plant Manager (919) 642-6658 985 Corinth Road Moncure, NC 27559	Yvonne Couts Environmental Coordinator (919) 545-5848 985 Corinth Road Moncure, NC 27559

Application Data

Application Number: 1900015.17A
Date Received: 01/30/2017
Application Type: Modification
Application Schedule: PSD

Existing Permit Data
Existing Permit Number: 03449/T45
Existing Permit Issue Date: 07/01/2016
Existing Permit Expiration Date: 06/30/2021

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2015	12.64	296.93	793.10	518.43	182.48	82.62	40.77 [Methanol (methyl alcohol)]
2014	14.18	309.21	571.44	550.64	138.51	73.16	32.11 [Methanol (methyl alcohol)]
2013	12.57	292.92	503.89	454.06	136.96	79.08	32.03 [Formaldehyde]
2012	13.66	313.22	533.29	523.84	137.67	222.00	140.87 [Formaldehyde]
2011	14.94	290.11	493.00	493.05	122.81	161.78	70.94 [Methanol (methyl alcohol)]

Review Engineer: Betty Gatano

Review Engineer's Signature: **Date:**

Comments / Recommendations:
Issue 03449/T46
Permit Issue Date:
Permit Expiration Date:

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1.0 Introduction and Purpose of Application

1.1 Facility Description & Proposed Change

Arauco Panels USA, LLC (Arauco) currently holds Title V Permit No. 03449T45 with an expiration date of June 30, 2021 for a wood products manufacturing facility in Moncure, Chatham County, North Carolina. The facility produces medium density fiberboard (MDF) and particleboard (PB) at this location.

This Prevention of Significant Deterioration (PSD) application does not include the PB plant at the facility and addresses only the MDF plant. Best Available Control Technology (BACT) limits for the PB plant were established prior to the installation of the Photo-catalytic Gas Treatment (PGT) systems at Arauco, and the existing BACT limits for the PB plant are not affected by this modification.

Background and PSD Project

Arauco has used PGT systems to control pollutants from its PB and MDF plants. The PB plant included one PGT system (ID No. CD-PB- PGT), while the MDF plant used three PGT systems (ID Nos. CD02-2, CD14-2, and CD16-2) for pollutant control. The PGT systems were installed by Uniboard USA, LLC, a previous owner of the Moncure facility. The PGT units oxidize and thereby destroy emissions of volatile organic compounds (VOCs) and certain hazardous air pollutants (HAPs), including formaldehyde and methanol, using hydrogen peroxide and UV lighting systems. The PGT systems require significant quantities of proprietary ferrous sulfate and oxalic acid solutions for catalyzing the oxidation reaction. Further, the UV lighting systems are difficult to maintain and require frequent replacement due to the difficult operating environment. In addition to operational issues, the PGT systems and the associated chemicals have resulted in safety issues at the facility, including fires and chemical exposure to employees.

On September 9, 2015, Arauco entered into Special Order by Consent (SOC) 2015-002 with the North Carolina Division of Air Quality (NCDAQ) to request removal of the PGT units and to address the resulting noncompliance with 40 CFR Part 63 Subpart DDDD, "National Emission Standards for Hazardous Air Pollutants (NESHAP) for Plywood and Composite Wood Products." The SOC became final on November 2, 2015. The SOC allowed Arauco to decommission the PGT systems due to underperformance and safety issues noted above. Arauco has previously accepted PSD avoidance limits for the MDF plant, and the SOC also addressed the possibility decommissioning the PGT systems in the MDF plant could result in an exceedance of the avoidance limit for VOCs. In the event the PSD avoidance limit for VOCs was exceeded, Paragraph II.A.ii of the SOC required the Permittee to submit a PSD application if deemed necessary by the NCDAQ. Per a letter dated October 17, 2016, NCDAQ deemed it necessary that Arauco submit a PSD permit application because VOC emissions from the MDF plant had exceeded the PSD avoidance limit from June through September 2016. (Note exceedances of the PSD avoidance limit have been ongoing ever since June 2016.) The PSD application was due within 120 receipt of the letter (i.e., by February 14, 2017).

The PSD application was received on January 30, 2017 but did not contain the required Professional Engineer's (P.E.) seal. The P.E. seal was subsequently received on February 13, 2017, at which point the PSD application was deemed complete. The PSD application includes a BACT analysis for VOC from the MDF plant, as well as additional impacts (soils, vegetation, visibility) analysis, and to the extent necessary, a Class I area analysis.

Arauco is proposing a biofilter as BACT on the dryer, energy system, board cooler and press in the MDF plant. The BACT for other emission sources in the MDF plant is good maintenance and operating practices.

MDF Plant

Hardwood or softwood chips are supplied by an offsite vendor. Chips are transported from chip storage to the MDF production line in enclosed conveyors to prevent fugitive emissions. To begin the process, the chips are screened on an enclosed roller bed screen. Oversized chips are burned in the energy system (ID No. ES-02-A) and acceptable chips enter a surge bin where steam is introduced to soften the chips.

Next, the chips enter the refiner (ID No. ES-01) for grinding into small particles. During startup, shutdown, or malfunction conditions, the refiner abort cyclone (ID No. CD01) can be used to purge unresinated wood from the process instead of sending it to the two-stage dryer system (ID No. ES-02-A). During normal operation, emissions from the refiner are routed to the dryer system and are ultimately controlled in the dryer scrubber system (i.e., the venturi scrubbers (ID Nos. CD2 and CD14)).

The wood particles from the refiner continue to a blow line where resin is mixed with the wood particles before being sent to a two-stage dryer system (ID No. ES-02-B) for moisture removal. The dryer is wood-fired, with natural gas used for startup or for standby operations when the wood burners are offline. The dryer has two backup natural gas-fired dryer burners (ID Nos. ES-02-C and ES-02-D) for this purpose. A portion of the exhaust gas from the first stage of the dryer is recycled to the energy system, which supplies heat to the dryer system. Most of the exhaust from the first stage dryer is sent to two parallel wet scrubbing systems that consist of venturi scrubbers (ID Nos. CD02 and CD14) followed by the proposed biofilter (ID No. CD18). Exhaust from the second stage dryer is routed back to the first stage dryer.

Following the two-stage drying process, the wood fiber/resin mixture enters a fiber sifting system (ID No. ES-03) with a fabric filter control (ID No. CD03) on the exhaust. The mixture is formed into mats that are continuously loaded into the MDF press (ID No. ES-16). The dosing bin and forming line have a pneumatic clean-up system (ID No. ES-04) with a fabric filter to control particulate matter (PM) emissions (ID No. CD04). Reject material is sent through the material reject system (ID No. ES-05) and is either recycled within the process or sent to the sawdust and reject fiber silo (ID No. ES-09) for use in the energy system. The material reject system and reject silo are controlled by fabric filters (ID Nos. CD05 and CD09, respectively).

Heat and pressure are applied at the press to make MDF boards of varying thickness. Heat for the press is supplied by three natural gas-fired hot oil heaters (ID Nos. ES-18, ES-19, and ES-20). The MDF press vents to the dryer, which is controlled by the venturi scrubbers (ID Nos. CD02 and CD14) followed by the proposed biofilter (ID No. CD18). The board separating saw (ID No. ES-07) cuts the pressed MDF boards to size and is controlled by a fabric filter (ID No. CD07). The MDF boards then go to a board cooler. Exhaust from the MDF board cooler and press hall (ID No. ES-06-B) are routed to a mixing stack and mixed with clean air. A portion of the mixing stack exhaust goes to the energy system (ID No. ES-02-A) and a portion is used as inlet air to the two-stage dryer (ID No. ES-02-B). The energy system therefore provides some emission control for the MDF board cooler and press hall, with emissions

ultimately exhausting via the venturi scrubbers (ID Nos. CD02 and CD14) and proposed biofilter (ID No. CD18).

Once cooled, the MDF is cut and finished. The finishing process includes a series of cutting, sawing, and sanding systems each controlled with fabric filters. The finishing systems include sander systems 1 and 2 (ID Nos. ES-08 and ES-10) controlled via fabric filters (ID Nos. CD08 and CD10), and the saw system (including the board separating saw and panel saw) (ID No. ES-07) with associated fabric filter (ID No. CD07). Four material storage silos (ID Nos. ES-09 (recycled fiber silo), ES-12 (sander dust silo), ES-13 (dry saw dust silo), and ES-15 (recycled fiber silo)) are controlled by bin vent filters (ID Nos. CD09, CD12, CD13, and CD15, respectively).

The heat energy system (ID No. ES-02-A) burns biomass (both clean wood and resinated wood) to supply heat to the two-stage dryer system. It also heats thermal oil for use at the press and for generating steam for the refiners. A urea/water solution is injected into the flue gas of the energy system to provide nitrogen oxide (NO_x) emissions control. Because the energy system exhausts into the dryer, the dryer scrubber system ultimately provides emissions control for the energy system.

1.2 Plant Location

Arauco is located at 985 Corinth Road, Moncure, North Carolina, which is in southeastern Chatham County. Chatham County has been classified as in attainment for all pollutants subject to a National Ambient Air Quality Standard (NAAQS).

1.3 Permitting History Since Issuance of Special Order by Consent (SOC 2008-002)

Permit	Date	Description
03449T32	May 7, 2008	Air Permit No. 03449T32 issued to ATC Panels, Inc, a former owner.
03449T32	September 9, 2008	ATC Panels, Inc. and the NCDAQ entered into SOC 2008-002 on September 9, 2008 because the Permittee was unable to comply with 40 CFR Part 63 Subpart DDDD (MACT Subpart DDDD). The Permittee originally intended to comply with the MACT under the "low-risk" subcategory. However, that compliance option was vacated by a DC Circuit Court decision on October 4, 2007. The facility requested and received a compliance date extension from NCDAQ until October 1, 2008. The Permittee was unable to meet the extended deadline and entered into the SOC.
03449T33	November 25, 2008	Air Permit No. 03449T33 issued as a state only modification to change the ownership from ATC Panels, Inc. to Uniboard USA, LLC. The Permittee also submitted an air toxics demonstration as required under Section 2.2 A.2 in the permit.
03449T34	April 22, 2009	Air Permit No. 03449T34 issued as "Part I" significant modification to reconfigure a previously permitted MDF plant.
03449T35	October 15, 2009	Air Permit No. 03449T35 issued as "Part I" significant modification to remove a previously permitted biofilter and scrubber system used in the MDF plant.
03449T35	March 19, 2010	SOC 2008-002 was modified to address facility ownership changes as well as modify some of the milestone dates.

Permit	Date	Description
03449T36	October 18, 2010	Air Permit No. 03449T36 was issued as a "Part II" significant modification to add 112(j) provisions for the natural gas/ No. 2 fuel oil-fired boiler (ID No. PR-Heat1) and three natural gas-fired hot oil heaters (ID Nos. ES-18, ES-19, and ES-20).
03449T37	May 20, 2011	Air Permit No. 03449T37 issued as a minor modification to make the following changes: • Replace the existing fire pump engine (ID No. IDFP-1) with a new 347 hp unit. • Add a 1592 hp diesel fuel fired emergency generator (ID No. ES-21) • Correct the descriptors for the bagfilters (ID Nos. CD03 and CD 07). • Use PM CEMS in place of COMs for purposes of New Source Performance Standard (NSPS) 40 CFR Subpart Db compliance on the energy system (ID No. ES-02-A).
03449T38	July 11, 2011	Air Permit No. 03449T38 issued as a significant modification for the following changes: • Obtain NCDAQ concurrence that the biomass-fired MDF Energy System (ID No. ES-02A) was considered as a *process heater* and not a *steam generating unit* as defined in Subpart Db and therefore not subject to Subpart Db; and, the *primary function* of the Energy System is to produce a final product. • Remove all conditions associated with the applicability of NSPS 40 CFR Subpart Db.
03449T39	November 27, 2011	Air Permit No. 03449T39 issued as a "Part I" significant modification under 15A NCAC 02Q .0501(c)(2) to install a wet scrubber/PGT system to meet requirements of 40 CFR Part 63 Subpart DDDD at the PB plant, per the requirements of SOC 2008-002.
03449T40	August 23, 2012	Air Permit No. 03449T40 issued as an ownership and name change from Uniboard USA, LLC to Arauco Panels USA, LLC.
03449T41	April 12, 2013	Air Permit No. 03449T41 issued as a minor modification. On March 9, 2013, a fire destroyed the finishing sander baghouse (ID No. CD-2006.) The Permittee reconfigured existing baghouse (ID NO. CD-3515) with the equivalent efficiency to the position of the destroyed baghouse. Other control devices were also reconfigured.
03449T42	January 10, 2014	Air Permit No. 03449T42 issued as TV minor modification. The Permittee proposed firing natural gas in the biomass-fired Wellons unit (ID No. 3201) in the PB plant. The Permittee requested adding an alternate operating scenario to the permit for natural gas-firing in the Wellons unit.
03449T43	January 22, 2014	Air Permit No. 03449T43 issued as a significant modification for the following: • Application No. 13B - The permit application demonstrated compliance with 40 CFR Part 63 Subpart ZZZZ by May 3, 2013 for the emergency generator (ID No. ES-ODG), which is an existing emergency stationary RICE at a major source of HAP emissions. • Application No. 13C – The previous PSD avoidance limits for the MDF plant were revised for PM2.5, PM10, and VOC.
03449T44	May 27, 2015	Air Permit No. 03449T44 issued as an administrative amendment to revise emission factors and monitoring parameters in the permit related to the MDF plant.

Permit	Date	Description
03449T44	November 2, 2015	Arauco and the NCDAQ entered into SOC 2015-002 on November 2, 2015 primarily to address the MACT Subpart DDDD compliance issues associated with the technology chosen as a result of the previous SOC (2008-002). Potential violations of the PSD avoidance limit for VOC in the MDF plant were also addressed.
03449T45	July 1, 2016	Air Permit No. 03449T45 renewed with an expiration date of June 30, 2021. The following modifications were also made under this permit renewal/modification: • Submittal of the "Part II" application for the "Part I" applications 1900015.07A, 08C and 09B that addressed the rebuilding and modifications to the MDF plant. • Compliance of the PB and MDF plants with MACT Subpart DDDD • Modifications to the MDF plant performed primarily for compliance with MACT Subpart DDDD.

1.4 Application Chronology

Date	Event
December 5, 2016	Pre-application meeting between NCDAQ and Arauco occurred.
December 5, 2016	Tom Anderson of the Air Quality Analysis Branch of NCDAQ e-mailed personnel from US Forest Service, the Fish and Wildlife Services, and the National Park Service informing them of the project.
December 6, 2016	Jill Webster of the Fish and Wildlife Service sent an e-mail to Tom Anderson indicating that no additional information was needed for the project.
January 30, 2017	PSD permit application received. The permit application was incomplete because it did not contain the required P.E. seal.
January 31, 2017	A permit application acknowledgment letter was issued indicating the permit application was incomplete.
February 13, 2017	The required P.E. seal was received.
February 14, 2017	A copy of the PSD permit application was sent to Heather Ceron of EPA Region 4.
February 24, 2017	A letter was issued to Arauco indicating the PSD application was deemed complete.
Throughout April 2017	Betty Gatano had numerous discussions and e-mails with Adam Colt, consultant for the facility, regarding the PSD permit application.
April 24, 2017	Draft of permit and permit forwarded for internal NCDAQ review.
April 25, 2017	Comments received from Joe Voelker of the NCDAQ Permitting Staff
May 11, 2017	Comments received from Samir Parekh of the NCDAQ Stationary Source Compliance Branch and Jeff Twisdale, Temporary Permitting Supervisor.
May 11, 2017	Betty Gatano sent questions to Adam Colt based on feedback from the NCDAQ internal review.
May 16, 2017	Adam Colt submitted responses to questions via e-mail. Betty Gatano replied to Adam Colt that same day regarding permitting of CAM at the facility.
May 18, 2017	Adam Colt provided clarification on permitting of CAM.
May 19, 2017	Revised draft of permit and permit review forwarded externally and internally for comments.
May 24, 2017	Joe Voelker, Temporary Permitting Supervisor, raised questions regarding the proposed CAM plan in the permit.
June 12, 2017	Comments on draft received from Adam Colt.

Date	Event
June 14, 2017	Betty Gatano discussed the CAM plan at the facility with William Willets, Permitting Chief. Mr. Willets determined additional information was needed for the CAM plan. Ms. Gatano discussed the issue with Adam Colt.
June 23, 2017	Adam Colt submitted a CAM plan for the biofilter.
July 12, 2017	PSD letters specifying the publication date were mailed/e-mailed.
July 14, 2017	The draft permit and permit review forwarded to public notice.

2.0 Modified Emission Sources and Emissions Estimates

On September 14, 2015, the NCDAQ received notification from Arauco indicating that the PGT systems in the PB and MDF plants were shut down on September 10, 2015. The PGT systems were installed at Arauco, in part, to control hazardous air pollutants from various air emission sources subject to 40 CFR Part 63 Subpart DDDD, "NESHAP for Plywood and Composite Wood Products." These systems were installed in accordance with the "add-on control system" option in 40 CFR Part 63 Subpart DDDD (40 CFR 63.2240). With the shutdown of the PGT systems on both the PB and MDF plants, Arauco could no longer demonstrate compliance with 40 CFR Part 63 Subpart DDDD, and NCDAQ issued a Notice of Violation to Arauco on September 23, 2015. Arauco entered into SOC 2015-002 with NCDAQ to address the violation of 40 CFR 63 Subpart DDDD, and the SOC became final on November 2, 2015.

The SOC also addressed the possibility decommissioning the PGT systems in the MDF plant could result in an exceedance of the PSD avoidance limit for VOC. In the event the PSD avoidance limit for VOCs was exceeded, Paragraph II.A.ii of the SOC required the Permittee to submit a PSD application if deemed necessary by the NCDAQ. Per a letter dated October 17, 2016, NCDAQ deemed it necessary that Arauco submit a PSD permit application because VOC emissions from the MDF plant had exceeded the PSD avoidance limit from June through September 2016. (Note exceedances of the PSD avoidance limit have been ongoing since June 2016.) The PSD application was due by February 14, 2017, and a complete application was received on February 13, 2017.

This PSD permit application addresses the installation of the biofilter (ID No. CD18) as BACT for the MDF plant. The biofilter is used to control the following emission sources previously controlled by the PGT units in the MDF plant:

- Refiner (ID No. ES-01),
- Energy System (ID No. ES-02-A),
- Two stage dryer system with backup boilers (ID Nos. ES-02-B, ES-02-C, and ES-02-D),
- MDF Board cooler and Press Hall (ID No. ES-06-B), and
- MDF Press (ID No. ES-16).

The biofilter was initially permitted under on Air Permit No. 03449T45 issued on July 1, 2016. At that time the control device was not considered BACT, and the modification was not subject to PSD review because emissions of VOC remained below the PSD avoidance limit in the permit. In accordance with the October 17, 2016 letter from NCDAQ and as discussed in the PSD permit application, Arauco conducted a BACT analysis and determined that the biofilter was BACT for the MDF processes noted above. More discussion on the BACT analysis is provided in Section 4 below.

Emissions from the MDF plant before and after control by the biofilter are provided in the table below. Removal of the PGT units and replacement with the biofilter are only expected to affect

emissions of VOCs and certain HAPs. The biofilter is expected to reduce emissions of VOCs by 50 percent and to reduce emissions of certain HAPs by 90 percent per vender guarantee.

Pollutant	Uncontrolled Emissions from the MDF Plant (tons/year)	Emissions from the MDF Plant after Installation of the Biofilter (tons/year)	PSD Avoidance Limit (tons/year)
PM10	97.5	97.5	116.9
PM2.5	97.2	97.2	111.9
SO2	5.4	5.4	N/A
NOx	72.4	72.4	177.8
CO	98.3	98.3	N/A
VOC	853.7	448.5	337
Lead	0.02	0.02	N/A
Total CO2e	114,206 metric tons	114,206 metric tons	N/A

Notes:

- CO_2 equivalent (CO2e) is defined as the sum of individual greenhouse gas pollutant emission times their global warming potential, converted to metric tons. CO2, CH4, and N2O emission factors, which are used to determine CO_2e emissions, are based on GHG MRR (40 CFR 98 Subpart C, amended 11/29/2013).
- The CO2e emissions above do not include emissions from the biofilter. A conservative estimation indicates that the biofilter would increase CO2e emissions from the facility by less than 1%.

Arauco has previously accepted PSD avoidance limits for emissions of PM10, PM2.5, NOx, and VOC from the MDF plant, and these limits are also presented in the table above. As shown in the table, only emissions of VOC exceed the associated PSD avoidance limit. Thus, no PSD review is required for PM10, PM2.5 or NOx. Likewise, no PSD review is required for CO2e, even though emissions of CO2e appear to exceed the PSD significant emission rate (SER). The biofilter will not use combustion or catalysis to control VOC emissions, and CO_2e emissions from sources routed to the biofilter will remain uncontrolled (i.e., the biofilter will not control CO_2e emissions). Additionally, the PGT units did not control CO_2e emissions. Therefore, past actual CO_2 emissions are equal to projected actual emissions, as combustion at the MDF plant will not increase due to this project and CO2e emissions from the biofilter are minimal.

3.0 Project Regulatory Review

3.1 Regulations

The MDF plant is subject to the following regulations.

- 15A NCAC 02D .0512, Particulates from Wood Products Finishing Plants – The woodworking operations in the MDF plant (Section 2.1 B of the permit) are subject to 15A NCAC 02D .0512. Arauco must conduct monthly external inspections of the ductwork, cyclones, and bagfilters, noting the structural integrity, and conduct annual internal inspection of the bagfilters, noting the structural integrity and the condition of the filters. Arauco also must conduct associated recordkeeping and reporting. Continued compliance is anticipated.

- 15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes – The facility operations in the MDF plant (Section 2.1 C of the permit) are subject to 15A NCAC 02D .0515. Allowable emissions are determined from the equations in the table below:

Process Rate	Allowable Emission Rate Equation
Less than or equal to 30 tons per hour	$E = 4.10 \times P^{0.67}$
Greater than 30 tons per hour	$E = 55.0(P)^{0.11} - 40$

The facility is required to test emissions sources from the facility operations (vented via emission points EP-02 and EP-14) annually to demonstrate compliance with 15A NCAC 02D .0515. If the results of these tests are less than 80 percent of the allowable PM emissions, the Permittee is required to stack test only once every five years following the previous stack test. The most recent source test was conducted on November 4, 2014, and the results are as shown in the following table.

Pollutant	EP-02	EP-14	Total	Limit	Compliance
Filterable PM	6.86 lb/hr	5.90 lb/hr	12.76 lb/hr	---	---
Condensible PM	1.43 lb/hr	1.13 lb/hr	2.56 lb/hr	---	---
Total PM	8.29 lb/hr	7.03 lb/hr	15.32 lb/hr	47.39 lb/hr	Yes

1. lb/mmBtu based on lb/hr results and a reported heat input rate for the dryer of 132 mmBtu

The PM emissions were ~32 percent of the allowable emissions and accordingly, the next source test is due five years from November 4, 2014 or by November 4, 2019.

Arauco must also conduct inspection and maintenance of the control devices as recommend by the manufacturer and must maintain the pressure drop and flow rates on the venturi scrubbers (ID Nos. CD02 and CD14) within the operating range provided in the permit. Continued compliance is anticipated.

- 02D .0516 Sulfur Dioxide Control Requirement – Emission sources subject to this rule shall not emit more than 2.3 pounds of sulfur dioxide per million Btu input. The following emission sources in the MDF plant are subject to this rule:
  - Energy system (ID No. ES-02-A),
  - Two stage dryer system (ID No. ES-02-B) with two backup natural gas-fired dryer burners (ID Nos. ES-02-C and ES-02-D),
  - Three natural gas-fired hot oil heaters (ID Nos. ES-18, ES-19, and ES-20), and
  - Diesel fuel-fired emergency generator (ID No. ES-21).

  No monitoring, recordkeeping, or reporting is required when firing natural gas, wood, or diesel fuel because of the low sulfur content of the fuels. These fuels are inherently low enough in sulfur that continued compliance is expected.

- 15A NCAC 02D .0521, Control of Visible Emissions – The MDF plant was manufactured after July 1, 1971 and must not have visible emissions of more than 20 percent opacity when averaged over a six-minute period, except as specified in 15A NCAC 02D .0521(d). To ensure compliance, Arauco conducts visible emission observations once a week for the woodworking operations (Section 2.1 B of the permit) and the facilities operations (Section 2.1 C of the permit) in the MDF plant. Arauco also conducts associated recordkeeping and reporting. Continued compliance is anticipated.

The natural gas-fired hot oil heaters (ID Nos. ES-18, ES-19, and ES-20) and diesel fuel-fired emergency generator (ID No. ES-21) are also subject to 15A NCAC 02D .0521, but require no monitoring, recordkeeping, or reporting to ensure compliance.

- 15A NCAC 02D .0530, Prevention of Significant Deterioration – The MDF plant became subject to PSD when VOC emissions exceeded the PSD avoidance limit after removal of the PGT units. Arauco conducted a BACT analysis for the MDF plant under this permit application, and the analysis and the resulting BACT limits are discussed in more detail in Section 4.

- 15A NCAC 02D .0614, Compliance Assurance Monitoring (CAM) – CAM is applicable to any pollutant-specific emission unit (PSEU), if the following three conditions are met:
  - the unit is subject to any (non-exempt: e.g. pre-November 15, 1990, Section 111 or Section 112 standard) emission limitation or standard for the applicable regulated pollutant.
  - the unit uses any control device to achieve compliance with any such emission limitation or standard.
  - unit's precontrol potential emission rate exceeds either 100 tons/yr (for criteria pollutants) or 10/25 tons/yr (for HAPs).

  The venturi scrubbers (ID Nos. CD02 and CD14) on the refiner, energy system, dryers and press in the MDF plant are used primarily to comply with the PM emission standard under 15A NCAC 02D .0515. These emission sources have a potential to emit greater than 100 tons per year of PM10, and CAM applies to the venturi scrubbers. The permit currently contains a CAM condition for PM for the venturi scrubbers. No changes in the CAM condition for the venturi scrubbers are required under this modification, and continued compliance is anticipated.

  The MDF Plant is subject to 15A NCAC 02D .0530 for VOC emissions and must be evaluated for CAM for VOCs. The MDF facilities operations, which will be controlled by the biofilter, are considered large PSEUs because the emissions of VOCs after the biofilter exceed 100 tons per year. For large PSEUs, CAM must be addressed at the time the units are permitted rather than at Title V renewal, as specified in 40 CFR 64.5(a). A CAM plan for the biofilter was not submitted as part of the permit application but was subsequently submitted on June 23, 2017. The CAM plan as provided below will be added to the permit. Compliance is anticipated.

Monitoring Elements	**Indicator**
Measurement Approach [64.6(c)(1)(i), (ii)]	Temperature readings as provided by thermocouples located in the biofilter bed. [40 CFR 63.2262(m)]
Indicator Range [64.6(c)(2)]	Establish minimum and maximum 15-minute biofilter bed temperatures monitored during required performance test runs. [40 CFR 63.2262(m)] The indicator range for the minimum and maximum biofilter bed temperature is the 24-hour block average as specified in 40 CFR 63.2270 The Permittee shall be deemed in noncompliance with 15A NCAC 02D .0530, if the biofilter bed minimum and maximum temperatures are outside the indicator range,
QIP threshold [64.8]	Not Applicable

Monitoring Elements	Indicator
Data Representativeness [64.6(c)(1)(iii), 64.3(b)(1)]	Thermocouples will be installed in representative locations throughout the biofilter bed, in accordance with manufacturer specifications and recommendations, to accurately record the temperature in the biofilter bed. This data will be captured and stored electronically to yield 24-hour block averages to show compliance with 40 CFR Part 63 Subpart DDDD. [40 CFR 63.2262(m)(1), 15A NCAC 02D .0530] The thermocouples will be installed in positions that provide a representative temperature. The temperature sensors will have a minimum accuracy of 4 °F or 0.75% of the temperature value, whichever is larger. [40 CFR 63.2269(b)(1) and (2)]
Verification of Operational Status [64.3(b)(2)]	Monitoring shall be required upon issuance of Air Quality Permit No. **03449T46.**
QA/QC Practices and Criteria [64.3(b)(3)]	The Permittee will conduct a repeat performance test every two (2) years following the previous test and 180 days of replacement of the biofilter media. [Table 7 to 40 CFR 63, Subpart DDDD] The Permittee will perform an electronic calibration semiannually according to the manufacturer's owner's manual, and will also perform a temperature sensor validation check. The Permittee will inspect the thermocouples quarterly for integrity and for corrosion. [40 CFR 63.2269(b)(4) and (6)]
Monitoring frequency [64.3(b)(4)]	At least once every 15 minutes. [40 CFR 63.2269(a)]
Data collection procedure [64.3(b)(4)]	Temperature data will be logged in the facility's data historian and aggregated into 24-hour block averages. [Table 2 to 40 CFR 63, Subpart DDDD]

The Permittee relies on presumptively acceptable monitoring in the CAM plan as allowed under 40 CFR 64.4(b)(4).

- 15A NCAC 02D .1111, Maximum Achievable Control Technology (MACT) – Arauco is a major source of HAPs, and the MDF plant is subject to "NESHAP for Plywood and Composite Wood Products (PCWP)," 40 CFR Part 63 Subpart DDDD. More discussion of MACT is contained in Section 3.2 below.

- 15A NCAC 02D .1806, Control and Prohibition of Odorous Emissions – This rule is state enforceable only and is applicable facility-wide. Under this regulation, no facility shall operate without employing suitable measures for the control of odorous emissions. There is no history of odor complaints from the existing operations, and continued compliance is anticipated.

- 15A NCAC 02Q .0317, Avoidance Conditions – Arauco has previously accepted avoidance limits for 15A NCAC 02D .0530, PSD, for emissions of NOx, PM2.5, PM10, and VOC from the MDF plant. The Permittee exceeded the avoidance limit for VOC beginning in June 2016 and was required to undergone a BACT analysis for VOC under this permit modification. No increase in emissions is expected for NOx, PM2.5, or PM10, and emissions for these pollutants remain within the avoidance limits shown below:

    - Nitrogen oxide emissions shall not exceed 177.8 tons per consecutive 12-month.
    - PM2.5 emissions shall not exceed 111.9 tons per consecutive 12-month period.
    - PM10 emissions shall not exceed 116.9 tons per consecutive 12-month period.

To ensure compliance with the avoidance condition, Arauco is required to calculate the monthly and rolling 12-month total emissions for NOx, PM10, and PM2.5. The Permittee is also required to record the urea/water injection rate for the urea/water injection system (ID No. CD02-A) and the throughput for the two-stage dryer (ID No. ES-02-A) and the MDF press (ID No. ES-16). No change to the permit condition for PSD avoidance is required for emissions of NOx, PM10, and PM2.5, and continued compliance is anticipated.

On November 1, 2016, amendments to 15A NCAC 02D .0902 for VOC emissions were finalized to narrow applicability of work practice standards in 15A NCAC 02D .0958 from statewide to the maintenance area for the 1997 8-hour ozone standard. This change is being made primarily because the abundance of biogenic VOC emissions in North Carolina results in ozone formation being limited by the amount of available NOx emissions. Provisions of the Clean Air Act require VOC requirements previously implemented in an ozone nonattainment area prior to redesignation remain in place. However, facilities outside the maintenance area counties for the 1997 8-hour ozone standard would no longer be required to comply with the work practice standards in 15A NCAC 02D .0958. Chatham County has never been in nonattainment for ozone, and 15A NCAC 02D .0958 is no longer applicable to facilities, including Arauco, within the county. The permit condition for 15A NCAC 02D .0958 will be removed from the permit under this modification.

3.2 NESHAP for Plywood and Composite Wood Products

The MDF plant at Arauco is subject to 40 CFR Part 63 Subpart DDDD, "NESHAP for Plywood and Composite Wood Products," also referred to as the PCWP MACT. Arauco previously installed PGT systems in the MDF plant to comply with 40 CFR PART 63 Subpart DDDD. As discussed previously, these systems were removed due to underperformance and safety issues. On September 14, 2015, the NCDAQ received notification indicating that the PGT systems at Arauco were shut down on September 10, 2015. The NCDAQ and Arauco entered into SOC 2015-002, which became final on November 2, 2015, to address the noncompliance with 40 CFR Part 63 Subpart DDDD, among other issues.

Arauco conducted an evaluation and selected a biofilter as a control for compliance with MACT Subpart DDDD for the MDF plant. Biofilters are relatively commonplace controls for compliance with MACT Subpart DDDD in the wood products industry. The Permittee submitted a permit application on January 29, 2016 in accordance with SOC 2015-002 to install the biofilter (ID No. CD18) on the MDF plant, and Air Permit No. 03449T45 was issued on July 1, 2016 with the biofilter replacing the PGT units as control for the MDF plant.

Arauco must demonstrate that the resulting emissions from the biofilter meet the compliance options and operating requirements in Tables 1B and 2 of 40 CFR Part 63 Subpart DDDD. An outline of the requirements under MACT Subpart DDDD is provided under Table 4-1 of the permit application, and requirements for compliance are spelled out in detail in Section 2.2 A.3 of Air Permit No. 03449T45.

Arauco estimates that the biofilter will provide at least 90 percent control on formaldehyde and methanol and 50 percent on total VOCs based on vendor guarantees. Thus, the Permittee is expected to demonstrate compliance via control of either formaldehyde or methanol but not of total VOC, which is one of the compliance options under MACT Subpart DDDD. Performance testing will be required to verify compliance, and the biofilter bed temperature range will be established during the

performance testing. As indicated in the permit application, Arauco intends to monitor biofilter bed temperature every 15 minutes to demonstrate continuous compliance.

Arauco is deemed in noncompliance with MACT Subpart DDDD until the biofilter is installed and operational. The Permittee is following SOC 2015-002 to return to compliance. Installation, operation, and testing of the biofilter is dictated by milestone dates in SOC 2015-02, which are triggered off the issuance date of Air Permit No. 03449T45 on July 1, 2016. The table below provides the milestone dates for returning to compliance with MACT Subpart DDDD.

Milestone	Milestone Date	Calendar Date
Sign the necessary contract(s) for the purchase and installation of the biofilter	Within six (6) months after permit issuance	12/28/2016
Commence construction of the biofilter	Within three (3) months after signing of the purchasing contracts	3/28/2017
Compete construction of the biofilter	Within twenty (20) months after issuance of the permit	3/1/2018
Submit test protocol	At least sixty (60) days prior to testing	--
Conduct engineering evaluation, shakedown, and compliance testing to demonstrate compliance with applicable permit requirements and submit a test report	Within one hundred eighty (180) days after completion of installation.	8/28/2018

A schedule of compliance that references milestones in SOC 2015-002 will be incorporated into permit under this modification.

4.0 Prevention of Significant Deterioration

The PSD regulations are designed to ensure that the air quality in current attainment areas does not significantly deteriorate beyond baseline concentration levels. PSD regulations specifically apply to the construction of EPA-defined Major Stationary Sources in areas designated as attainment or unclassified attainment for at least one of the criteria pollutants. North Carolina has incorporated EPA's PSD regulations (40 CFR 51.166) into its air pollution control regulations in 15A NCAC 02D .0530. and 02D .0533.

4.1 PSD Applicability

Under PSD requirements all major new or modified stationary sources of air pollutants regulated and listed in this section of the Clean Air Act must be reviewed and approved prior to construction by the permitting authority. A major stationary source is defined as any one of 28 named source categories that has the potential to emit 100 tons per year of any regulated pollutant or any other stationary source that has the potential to emit 250 tons per year of any PSD regulated pollutant. Arauco is not one of the 28 listed source categories and is defined as major source under PSD because potential emissions of VOC, NOx, and CO exceed 250 tons per year.

With the removal of the PGT systems form the MDF plant, emissions of VOC eventually exceeded the SER of 40 tons per year, as indicated by the exceedance of the PSD avoidance limit for the MDF plant. Emissions of other PSD pollutants were unaffected by the removal of the PGT systems. Thus,

Arauco performed a BACT review and impact analysis related to PSD for VOC only for this modification.

The elements of a PSD review are as follows:

1) A BACT Determination as determined by the permitting agency on a case-by-case basis in accordance with 40 CFR 51.166(j),
2) An Air Quality Impacts Analysis including Class I and Class II analyses, and
3) An Additional Impacts Analysis including effects on soils and vegetation, and impacts on local visibility in accordance with 40 CFR 51.166(o).

4.2 BACT Analysis

Under PSD regulations, the basic control technology requirement is the evaluation and application of BACT. BACT is defined as follows [40 CFR 51.155 (b)(12)]:

> *An emissions limitation...based on the maximum degree of reduction for each pollutant... which would be emitted from any proposed major stationary source or major modification which the reviewing authority, on a case-by-case basis, taking into account energy, environment, and economic impacts and other costs, determines is achievable... for control of such a pollutant.*

As evidenced by the statutory definition of BACT, this technology determination must include a consideration of numerous factors. The structural and procedural framework upon which a decision should be made is not prescribed by Congress under the Act. This void in procedure has been filled by several guidance documents issued by the federal EPA. The only final guidance available is the October 1980 "Prevention of Significant Deterioration – Workshop Manual." As the EPA states on page II-B-1, "A BACT determination is dependent on the specific nature of the factors for that particular case. The depth of a BACT analysis should be based on the quantity and type of pollutants emitted and the degree of expected air quality impacts." (emphasis added). The EPA has issued additional DRAFT guidance suggesting the use of what they refer to as a "top-down" BACT determination method. While the EPA Environmental Appeals Board recognizes the top-down approach for delegated state agencies,[1] this procedure has never undergone rulemaking and as such, the process is not binding on fully approved states, including North Carolina.[2] The Division prefers to follow closely the statutory language when making a BACT determination and therefore bases the determination on an evaluation of the statutory factors contained in the definition of BACT in the Clean Air Act. As stated in the legislative history and in EPA's final October 1980 PSD Workshop Manual, each case is different and the State must decide how to weigh each of the various BACT factors. North Carolina is concerned that the application of EPA's DRAFT suggested a top-down process will result in decisions that are inconsistent with the Congressional intent of PSD and BACT. The following are passages from the legislative history of the Clean Air Act and provide valuable insight for state agencies when making BACT decisions.

> The decision regarding the actual implementation of best available technology is a key one, and the committee places this responsibility with the State, to be determined on a case-by-case judgment. It is recognized that the phrase has broad flexibility in how it should and can be interpreted, depending on site.

[1] See, http://es.epa.gov/oeca/enforcement/envappeal.html for various PSD appeals board decisions including standard for review.
[2]North Carolina has full authority to implement the PSD program, 40 CFR Sec. 52.1770

> In making this key decision on the technology to be used, the State is to take into account energy, environmental, and economic impacts and other costs of the application of best available control technology. The weight to be assigned to such factors is to be determined by the State. Such a flexible approach allows the adoption of improvements in technology to become widespread far more rapidly than would occur with a uniform Federal standard. The only Federal guidelines are the EPA new source performance and hazardous emissions standards, which represent a floor for the State's decision.
>
> This directive enables the State to consider the size of the plant, the increment of air quality which will be absorbed by any particular major emitting facility, and such other considerations as anticipated and desired economic growth for the area. This allows the States and local communities judge how much of the defined increment of significant deterioration will be devoted to any major emitting facility. If, under the design which a major facility proposes, the percentage of increment would effectively prevent growth after the proposed major facility was completed, the State or local community could refuse to permit construction, or limit its size. This is strictly a State and local decision; this legislation provides the parameters for that decision.
>
> One of the cornerstones of a policy to keep clean areas clean is to require that new sources use the best available technology available to clean up pollution. One objection which has been raised to requiring the use of the best available pollution control technology is that a technology demonstrated to be applicable in one area of the country in not applicable at a new facility in another area because of the differences in feedstock material, plant configuration, or other reasons. For this and other reasons the Committee voted to permit emission limits based on the best available technology on a case-by-case judgment at the State level. [emphasis added]. This flexibility should allow for such differences to be accommodated and still maximize the use of improved technology.
>
> *Legislative History of the Clean Air Act Amendments of 1977.*

The BACT analysis provided by Arauco for the proposed project was conducted consistent with the above definition as well as EPA's five step "top-down" BACT process. The "top down" methodology results in the selection of the most stringent control technology in consideration of the technical feasibility and the energy, environmental, and economic impacts. Control options are first identified for each pollutant subject to BACT and evaluated for their technical feasibility. Options found to be technically feasible are ranked in order of their effectiveness and then further evaluated for their energy, economic, and environmental impacts. In the event that the most stringent control identified is selected, no further analysis of impacts is performed. If the most stringent control is ruled out based upon economic, energy, or environmental impacts, the next most stringent technology is similarly evaluated until BACT is determined.

After establishing the baseline emissions levels required to meet any applicable NSPS, NESHAPs, or SIP limitations, the "top-down" procedure followed for each pollutant subject to BACT is outlined as follows:

- Step 1: Identify of all available control options - from review of EPA RACT/BACT/LAER Clearinghouse (RBLC), agency permits for similar sources, literature review and contacts with air pollution control system vendors.
- Step 2: Eliminate technically infeasible options - evaluation of each identified control to rule out those technologies that are not technically feasible (i.e., not available and applicable per EPA guidance).

- Step 3: Rank remaining control technologies - "Top-down" analysis, involving ranking of control technology effectiveness.
- Step 4: Evaluate most effective controls and document results – Economic, energy, and environmental impact analyses are conducted if the "top" or most stringent control technology is not selected to determine if an option can be ruled out based on unreasonable economic, energy or environmental impacts.
- Step 5: Select the BACT – the highest-ranked option that cannot be eliminated is selected, which includes development of an achievable emission limitation based on that technology.

The basic goal of the PSD regulations is to ensure the air quality in clean (i.e. attainment) areas does not significantly deteriorate while maintaining a margin for future industrial growth. The PSD regulations focus on industrial facilities, both new and modified, that create large increases in the emission of certain pollutants. The EPA promulgated final regulations governing the PSD in the Federal Register published August 7, 1980. Effective March 25, 1982, the NCDAQ received full authority from the EPA to implement PSD regulations in the state.

4.3. BACT Analysis for Dryer, Energy Systems, and Cooler

4.3.1 Identify Control Technologies

An investigation was performed to identify current regulatory BACT/LAER determinations for manufactured wood products. The search involved a review of EPA's RBLC, which included information on BACT and LAER decisions throughout the country. Specifically, Arauco performed searches of the RBLC database for the past fifteen years using the categories of Board Presses (RBLC Code 30.520) and Board Manufacturing Dryers (RBLC Code 30.530). For dryers, energy systems and coolers in the RBLC, regenerative thermal oxidizers (RTOs) were the most commonly identified control options, with one example of a RTO coupled with low NOx burners on a dryer. Good combustion practices were the second most common control method.

Based on the review of RBLC, relevant literature, and knowledge of the industry, the following control technologies were considered in this BACT analysis for VOC reduction for the dryer, energy system, and cooler:

- Biofiltration,
- Catalytic Oxidation,
- Thermal Oxidation, and
- Proper Maintenance and Operating Practices (base case).

<u>Biofiltration</u>

Biofiltration is an air pollution control technology in which VOCs are oxidized using living micro-organisms on a media bed (sometimes referred to as a bioreactor). As emissions flow through the bed media under controlled temperature and humidity, pollutants are absorbed by moisture on the media and come into contact with the microbes. The microbes consume and metabolize the excess organic pollutants, converting them to carbon dioxide and water, much like a traditional oxidation process. This control is considered technically feasible for the MDF plant.

Catalytic Oxidation

In a catalytic oxidizer, a catalyst is used to lower the activation energy needed for oxidation. When a preheated gas stream is passed through a catalytic oxidizer, the catalyst bed initiates and promotes the oxidation of VOC without being permanently altered. In catalytic oxidization, combustion occurs at significantly lower temperatures than with thermal oxidization. However, care must be taken to ensure complete combustion.

A major disadvantage of catalytic oxidization is the high cost of fuel and catalyst replacement. Although catalytic oxidization requires less fuel than thermal oxidization at the same heat recovery rate, the catalyst replacement costs can be significant. In some cases, disposal of spent catalyst can also prove a difficult hurdle because of deposits of potentially hazardous substances. Another cost associated with catalytic oxidation for this facility is PM control. Arauco has also determined that a Wet Electrostatic Participator (WESP) would be required prior to the regenerative catalytic oxidizer (RCO) to combat the effects of the relatively high TSP/PM10 emission rates on the RCO.

Arauco has experience using RCO technology on its continuous wood products presses, which are similar to the MDF press. The nature of lubrication for the continuous press fouls the precious metal catalyst bed within months. Industry practices at Arauco have illustrated that catalytic oxidation has not been successfully applied to wood dryers. For this reason, catalytic oxidation is considered technologically infeasible for the dryer, energy system, and cooler.

Regenerative Thermal Oxidization

In regenerative oxidization, the inlet gas stream is drawn through a hot ceramic or stoneware bed that preheats the gas stream prior to its entering the combustion chamber. The hot flue gas exits the oxidizer and passes into a second ceramic bed, which captures and stores thermal energy. When this bed has been heated sufficiently, the flow is switched so that the inlet gas is redirected through the hot bed and the exhaust gas is passed through the now cool primary bed. By switching flows in this manner, high heat exchanger temperatures are maintained. Aside from the ceramic media heat exchanger, regenerative systems operate in the same manner as conventional thermal oxidization.

Regenerative oxidizers provide a high degree of thermal heat recovery and are useful for situations where the air flowrate is high and VOC concentration is low. In these cases, a significant amount of heat recovery is required to minimize overall system operating costs. As with the RCO, an additional cost is associated with PM removal prior to the RTO. A WESP would be required prior to the RTO to combat the effects of the relatively high TSP/PM10 emission rates on the RTO.

Previous BACT determinations in the RBLC search and literature review show that RTOs used in the wood products industry have met a 95 percent control efficiency for VOC. This control is deemed technically feasible for the MDF plant.

Proper Maintenance and Operating Practices

VOC emissions can be reduced through proper maintenance and operating practices of the emission sources. This option is considered the base case for this analysis.

4.3.2 Eliminate Technically Infeasible Options

The only control technology considered technically infeasible is the RCO due to potential catalyst fouling as noted above in Section 4.3.1. This control option will not be evaluated further. All other control options will be considered for further evaluations under the BACT analysis for the dryer, energy system, and cooler.

4.3.3 Rank Remaining Control Technologies by Effectiveness

The remaining control technologies were ranked from the most stringent to the least stringent, as shown in the table below.

Control Technology	Approximate Control Efficiency (%)
RTO	95%
Biofilter	50%
Proper Maintenance and Operating Practices	Base case

4.3.4 Evaluate Technically Feasible Control Options

Regenerative Thermal Oxidization

While the RTO has a higher efficiency at reducing VOC than the other technologies considered, it is eliminated from the consideration due to cost and environmental impact.

Arauco provided a BACT cost calculation that included both the RTO and WESP, because the WESP is required to protect the RTO from PM emissions. The cost calculation showed the RTO and WESP would cost approximately $4,337 per removed ton per combined vent stream. The estimated cost impacts were estimated using the Office of Air Quality Planning and Standards Control Cost Manual (CCM)[3], past permitting experience, and vender quotes for the RTO and WESP. All costs provided in the CCM were updated to 2016 dollars.

Add-On Control Technology	Baseline Emissions (tons/yr)	VOC Emissions Reduction (%)	VOC Emissions Reduction (tpy)	Total Capital Cost (2014 $)	Total Annual Cost ($/yr)	Cost - Effectiveness ($/Ton)
RTO and WESP	810	95%	770	$11,962,013	$3,339,923	$4,337

Notes:
- Emissions of VOC result from the combined exhaust stream dryer, energy system, board cooler and press hall, and the MDF press.
- Emissions from the MDF Press are vented to the dryer and energy system and are ultimately controlled by the control system on the dryer exhaust.

Even with the WESP, the RTO is expected to experience problems with the ceramic media due to loading of particulate matter. The cost estimate includes bi-annual (every two years) replacement due to particle build up on the media.

[3] Office of Air Quality Planning and Standards Cost Control Manual. Sixth Edition. EPA/452/B-02-001. Office of Air Quality Planning and Standards, Environmental Protection Agency, Research Triangle Park, North Carolina. January 2002. https://www3.epa.gov/ttncatc1/dir1/c_allchs.pdf

The environmental impact of the RTO is significant. The use of RTO leads to the generation of NOx, CO, and other pollutants not associated with the biofilter. NOx emissions are of most importance because of their involvement in the production of ground-level ozone, which forms from the interaction of NOx, VOC, and sunlight. The southeastern US, including in North Carolina, is a NOx-limited area, meaning ground-level ozone concentration increases proportionally with increasing NO_X and is relatively insensitive to increasing VOCs. The addition of NOx emissions to the atmosphere will have a much higher impact on ground level ozone formation than the emissions of VOCs.

Due to the high cost of VOC removal with the RTO/WESP system and more importantly due to the adverse environmental impact due to NOx formation associated with the RTO, Arauco is eliminating the RTO as a control option under BACT.

Biofilter

Arauco proposes the currently permitted biofilter as BACT control for the dryer, energy system and cooler. The biofilter has several benefits over the RTO, most notable no additional emissions of NOx, CO or other pollutants resulting from fuel consumption. Arauco proposes a maximum emission rate of 2.88 lb WPP1[4] VOC/ODMT as the BACT limit for VOC control of the dryer, energy system, and board cooler. This value was based on uncontrolled source-specific testing in November 2011 of softwood and a 50 percent control efficiency of the proposed biofilter for VOCs.

Proper Maintenance and Operating Practices

Arauco has proposed the biofilter as BACT technology, which is a more stringent technology than proper maintenance and operating practices. Therefore, this control option will not be considered further.

4.3.5 Select BACT for Dryer, Energy System, and Cooler

A biofilter is the selected BACT controls for VOC for the dryer, energy system, and board cooler. Arauco proposes a maximum emission rate of 2.88 lb WPP1 VOC/ODMT as BACT for VOC control of these emission sources. Arauco will conduct testing of the biofilter to establish the bed temperature range for compliance. Arauco will demonstrate continuous compliance by monitoring the bed temperature at a frequency of four times an hour to ensure the biofilter is operating properly. The Permittee will also conduct associated recordkeeping and reporting to demonstrate compliance with the BACT limit.

The NCDAQ concurs with Aruaco's proposed BACT controls and emission limit for the dryer, energy system, and board cooler.

4.4 BACT Analysis for MDF Press

4.4.1 Identify Control Technologies

An investigation was performed to identify current regulatory BACT/LAER determinations for manufactured wood products. The search involved a review of EPA's RBLC, which included

[4] Wood Products Protocol 1 (WPP1) as provided in U.S. EPA, document entitled, "Interim VOC Measurement Protocol for the Wood Products Industry," July 2007.

information on BACT and LAER decisions throughout the country. Specifically, Arauco performed searches of the RBLC database for the past fifteen years using the categories of Board Presses (RBLC Code 30.520) and Board Manufacturing Dryers (RBLC Code 30.530). For presses, RTO and catalytic oxidizers were the most commonly identified control options. Biofilters were the third most common control option, with two facilities installing biofilters on their presses.

Based on the review of RBLC, relevant literature, and knowledge of the industry, the following control technologies were considered in this BACT analysis for VOC reduction for the MDF press:

- Biofiltration,
- Catalytic Oxidation,
- Thermal Oxidation, and
- Proper Maintenance and Operating Practices (base case).

A description of each control considered in the BACT analysis for the MDF press is provided above in Section 4.3.1.

4.4.2 Eliminate Technically Infeasible Options

Although catalytic oxidation was identified as BACT on several presses in the RBLC, Arauco has determined through practical experience that RCOs are not technology feasible for its presses. The lubricants used on its continuous presses have shown to foul the precious metal catalyst bed within months. For this reason, the RCO is considered technically infeasible. This control option will not be evaluated further. All other control options will be considered for further evaluations under the BACT analysis for the MDF press.

4.4.3 Rank Remaining Control Technologies by Effectiveness

The remaining control technologies were ranked from the most stringent to the least stringent, as shown in the table below.

Control Technology	Approximate Control Efficiency (%)
RTO	95%
Biofilter	50%
Proper Maintenance and Operating Practices	Base case

4.4.4 Evaluate Technically Feasible Control Options

<u>RTO</u>
The discussion of the RTO is provided in above in Section 4.3.4. As noted above, the cost and environmental impacts eliminate this control option from further consideration.

<u>Biofilter</u>
Arauco proposes the currently permitted biofilter as BACT control for the MDF press. The biofilter has several benefits over the RTO, most notable no additional emissions of NOx, CO or other pollutants resulting from fuel consumption. Arauco proposes a maximum emission rate of 0.17 WPP1 VOC/MSF as the BACT limit for VOC control of MDF press. This value was based on "Control Device Maintenance Downtown factor" for the MDF Press and a 50 percent control efficiency of the proposed biofilter for VOCs.

Proper Maintenance and Operating Practices
Arauco has proposed the biofilter as BACT technology, which is a more stringent technology than proper maintenance and operating practices. Therefore, this control option will not be considered further.

4.4.5 Select BACT for MDF Press

A biofilter is the selected BACT for the MDF press. Arauco proposes a maximum emission rate of 0.17 WPP1 VOC/MSF as the BACT limit for VOC control of MDF press. Arauco will conduct testing of the biofilter to establish the bed temperature range for compliance. Arauco will demonstrate continuous compliance by monitoring the bed temperature at a frequency of four times an hour to ensure the biofilter is operating properly. The Permittee will also conduct associated recordkeeping and reporting to demonstrate compliance with the BACT limit.

The NCDAQ concurs with Aruaco's proposed BACT controls and emission limit for the MDF press.

4.5 BACT for Forming and Finishing Equipment

The forming, finishing, and blending areas of the MDF plant include such processes as saws, sanders, fiber sifters, mat rejects, silos, and forming line clean-up systems. Although PM is the primary pollutant from these emission sources, VOCs are also emitted, and a BACT analysis was conducted for the VOCs emitted from the forming and finishing processes.

4.5.1 Identify Control Technologies

An investigation was performed to identify current regulatory BACT/LAER determinations for manufactured wood products. The search involved a review of EPA's RBLC, which included information on BACT and LAER decisions throughout the country. Specifically, Arauco performed searches of the RBLC database for the past fifteen years using the categories of Board Presses (RBLC Code 30.520) and Board Manufacturing Dryers (RBLC Code 30.530). The search results indicated that good design and operation were the most commonly referenced control option. In one instance, a VOC limit for paint/ink was referenced. No add-on controls for VOCs were noted in the RBLC for these emission sources.

Based on the review of RBLC, relevant literature, and knowledge of the industry, the following control technologies were considered in this BACT analysis for VOC reduction for forming and finishing equipment:

- Biofiltration,
- Catalytic Oxidation,
- Thermal Oxidation, and
- Proper Maintenance and Operating Practices (base case).

A description of each control considered in the BACT analysis for forming and finishing process is provided above in Section 4.3.1.

4.5.2 Eliminate Technically Infeasible Options

RTO

PM controls prior to the RTO would be necessary to prevent the high quantities of PM from entering the RTO. The emission sources in the forming and finishing operations currently have fabric filters to control PM and these could reduce the PM emissions to an extent that would allow a stand-alone RTO to be technically feasible. However, in the event of a fabric filter failure, the resinated wood particles in the exhaust stream would create a fire hazard for the RTO. As such, the use of filters for PM control in conjunction with the RTO is not considered technically feasible.

RCO

As with the RTO, a standalone RCO is not technically feasible due to high loading of PM. Fabric filters would control for PM and allow the RCO to operate. However, the same fire hazard risk exists for the RCO as for an RTO system. Thus, this control device is not technically feasible.

4.5.3 Rank Remaining Control Technologies by Effectiveness

The remaining control technologies were ranked from the most stringent to the least stringent, as shown in the table below.

Control Technology	Approximate Control Efficiency (%)
Biofilter	50 to 75%
Good Design/Operation	Base Case

4.5.4 Evaluate Technically Feasible Control Options

Biofilter

A BACT cost calculation for the biofilter is shown in the table below. The estimated cost impacts were estimated using the Office of Air Quality Planning and Standards CCM[5], past permitting experience, and vender quotes for the biofilter. All costs provided in the CCM were updated to 2016 dollars.

Add-On Control Technology	Baseline Emissions (tons/yr)	VOC Emissions Reduction (%)	VOC Emissions Reduction (tpy)	Total Capital Cost (2014 $)	Total Annual Cost ($/yr)	Cost - Effectiveness ($/Ton)
Biofilter	41.7	50%	20.9	$724,488	$182,137	$8,731
Notes: Emissions of VOC result from the combined exhaust stream of the fiber sifter system, (ID No. ES-03), forming line clean-up system (ID No. ES-04), mat reject system (ID no. ES-05), saw system (ID No. ES-07), sander system Nos. 1 and 2 (ID Nos. ES-08 and ES-10, recycled fiber silo Nos. 1 and 2 (ID Nos. ES-09 and ES-15), sander dust silo Nos. 1 and 2 (ID Nos. ES-12 and ES-17) and dry sawdust silo filter (ID No. ES-13).						

[5] Office of Air Quality Planning and Standards Cost Control Manual. Sixth Edition. EPA/452/B-02-001. Office of Air Quality Planning and Standards, Environmental Protection Agency, Research Triangle Park, North Carolina. January 2002. https://www3.epa.gov/ttncatc1/dir1/c_allchs.pdf

A BACT cost calculation showed that using a biofilter to control VOC emissions from the forming and finishing operations would cost approximately $8,731 per removed ton per combined vent stream. The cost makes the biofilter not economically viable, and this control device is not considered further.

Good Design and Operation
This control option is technically feasible and is the proposed VOC BACT for these emission sources.

4.5.5 Select BACT for Forming and Finishing Equipment

Arauco is proposing proper operation and maintenance according the manufacturers' recommendations to be considered BACT for the forming and finishing operations. The facility is proposing VOC emission rates as the BACT limits, which are based on previous stack testing at the facility.

Emission Source ID	Description	VOC Emissions (as WWP1 VOC)	
		BACT Limit	Units
ES-03	Fiber Sifter System	0.082	lb/ODT
ES-04	Forming Line Clean-Up System	0.082	lb/ODT
ES-05	Mat Reject System	0.082	lb/ODT
ES-07	Saw System	0.01	lb/MSF
ES-08	Sander System No. 1 (Primary sander)	0.01	lb/MSF
ES-10	Sander System No. 2 (Finishing Sander)	0.01	lb/MSF
ES-09	Recycled Fiber Silo No. 1	0.082	lb/ODT
ES-15	Recycled Fiber Silo No. 2	0.082	lb/ODT
ES-12	Sander Dust Silo No. 1	0.268	lb/ODT
ES-17	Sander Dust Silo No. 2	0.268	lb/ODT
ES-13	Dry Sawdust Silo Filter	0.268	lb/ODT

Arauco will comply by using good engineering practices and performing regular maintenance and cleaning on the equipment.

The NCDAQ concurs with Aruaco's proposed emission limits for the forming and finishing equipment.

4.6 Other VOC emission sources in the MDF Plant

The following emission sources in the MDF plant have VOC emissions of less than 5 tons per year, which makes them insignificant activities in accordance with 15A NCAC 02Q .0503(8):

- Natural gas-fired hot oil heaters (ID Nos. ES-18, ES-19, and ES-2)
- Gasoline storage tank (ID No. I-Gas)

- Diesel storage tanks (not permitted)

The VOC emissions from these sources are so small that add-on control devices are cost prohibitive. Arauco proposes proper design, maintenance, and operating practices as BACT for these sources. Recordkeeping will include logs of maintenance and correction actions for each source. Additionally, the RBLC search results indicated that good design and operation were the only referenced control options for these types of emission sources.

Arauco also operates the following emergency engines, which are insignificant sources of VOC.

- Diesel fuel-fired emergency generator (ID No. ES-21)
- Diesel fuel-fired pump engine (ID No. I-DFP-1)

For the emergency generator and fire pump, Arauco proposes work practice standards and maintenance required by 40 CFR 63, Subpart ZZZZ and 40 CFR 60, Subpart IIII, as applicable. Work practice standards in Subpart ZZZZ are located in 40 CFR 63.6600, 63.6602, and Table 2c to Subpart ZZZZ. NSPS Subpart IIII, in 40 CFR 60.4211(b), requires engines to be certified according to 40 CFR Part 89 for the same model year and maximum engine power, or requires keeping records indicating compliance with the standards.

The NCDAQ concurs with Aruaco's proposed emission limits for the emergency engines and other VOC emission sources.

4.7 Proposed BACT for MDF Plant

Based on the BACT analyses for the MDF Plant discussed in Sections 4.4 through 4.6 above, the NCDAQ has determined the technology and limitations presented in the following table are BACT for the sources that emit VOCs in the MDF plant. The BACT permit condition is provided in Attachment 1 to this permit review.

Equipment/ Process	ID Number	Selected BACT	Emission/Operating Limit	Compliance Method
Energy System	ES-02-A	Biofiltration	2.88 lb WPP1 VOC/ODMT (24-hour average)	Monitor biofilter bed temperature four times per hour
Two Stage Boiler System with backup natural gas burners	ES-02-B ES-02-C ES-02-D			
MDF Board Cooler and Press Hall	ES-06-B			
MDF Press	ES-16	Biofiltration	0.17 lb WPP1 VOC/MSF (24-hour average)	Monitor biofilter bed temperature four times per hour
Forming and Finishing Equipment	ES-03	Proper design and operation and maintenance practices	0.082 WPP1 VOC/ODMT	Maintenance and Recordkeeping
	ES-04		0.082 WPP1 VOC/ODMT	
	ES-05		0.082 WPP1 VOC/ODMT	
	ES-07		0.01 WPP1 VOC/MSF	
	ES-08		0.01 WPP1 VOC/MSF	
	ES-10		0.01 WPP1 VOC/MSF	
	ES-09		0.082 WPP1 VOC/ODMT	
	ES-15		0.082 WPP1 VOC/ODMT	

Equipment/ Process	ID Number	Selected BACT	Emission/Operating Limit	Compliance Method
	ES-12		0.268 WPP1 VOC/ODMT	
	ES-17		0.268 WPP1 VOC/ODMT	
	ES-13		0.268 WPP1 VOC/ODMT	
Emergency Diesel engines	ES-21 I-DFP	Work practice standards and maintenance as required by 40 CFR 40 Part 63 Subpart ZZZZ and CFR 40 Part 60 Subpart IIII as applicable	Insignificant source of VOC	Maintenance and Recordkeeping
Natural gas-fired hot oil heaters	ES-18, ES-19, ES-20	Proper design and operation and maintenance practices	Insignificant source of VOC	Maintenance and Recordkeeping
Gasoline storage tank Diesel storage tanks	I-Gas Not permitted	Proper design and operation and maintenance practices	Insignificant source of VOC	Maintenance and Recordkeeping

4.7. PSD Air Quality Impact Analysis

PSD regulations [40 CFR 51.166(k)] require an applicant to perform an ambient impact analysis to demonstrate, 1) that no NAAQS will be exceeded at any location and during any time period where the proposed new source or modification will have significant impact; and 2) that the proposed new source or modification, in combination with other increment-affecting sources, will not cause any allowable PSD increment to be exceeded. PSD regulation 40 CFR 51.166(m) requires analysis of ambient air quality in the impact area of the proposed source or modification for all pollutants (including those for which no NAAQS exist) with emissions increases in significant [40 CFR 51.166(b)(23)] quantities.

Potential Emissions

VOC emissions are considered precursors to ozone formation. PSD regulations [40 CFR 51.166(i)] state that an ambient impact analysis of ozone, including the gathering of ambient air quality data, could be required if the net VOC emission increase is greater than 100 tons per year. Arauco emits VOC at levels greater than 100 tons per year, thus triggering an ozone impact analysis requirements.

Arauco provided a qualitative ozone analysis for this PSD application by selecting an appropriate ozone monitoring site and comparing the monitored values with the NAAQS for ozone. Arauco selected the Pittsboro monitor located in Pittsboro, Chatham County, NC as the best representative monitoring site for this analysis. The monitor is located roughly 15 miles from the facility and is the same county. The ozone NAAQS was then compared with the data from the Pittsboro monitor as shown in the table below.

Pollutant	Standard	Form	Year	Monitored Value (ppm)
Ozone	0.070 ppm	Annual fourth-highest daily, maximum 8-hour concentration averaged over three years	2013	0.057
			2014	0.061
			2015	0.057
Notes: Monitoring data obtained from NCDAQ.				

Both NOx and VOC are required for ozone formation. Because this permitting action will not increase NOx and the VOC emissions are expected to decrease upon installation of the biofilter, the ozone concentration in Chatham County is not expected to increase due to this permitting action.

Non-Regulated Pollutant Impact Analysis

Arauco submitted air modeling in 2012 and 2015 to demonstrate compliance with NC Air Toxic Regulations under 15A NCAC 02D .1100, Control of Toxic Air Pollutants. The previous modeling was conducted for all sources of Toxic Air Pollutants (TAPs) with emissions above the Toxic Permitting Emission Rates. These TAPs were evaluated at potential levels and shown to be below their Acceptable Ambient Levels. Based on the modeling demonstration results, all permit conditions for 15A NCAC 02D .1100 were removed from the permit under Air Permit No. 03449T45 issued on July 1, 2016. More detail on the removal of the air toxics permit conditions is provided in the associated permit review.[6]

Because Arauco is not proposing to increase emissions of TAPs or introduce any new TAPs with this permit application, this permit modification does not meet the definition of modification under air toxics as provided in 15A NCAC 02Q .0706. Therefore, no demonstration for compliance with NC Air Toxics is required with this permit modification.

4.8 Class I Impact Analysis

PSD Class I impact analyses contain evaluations of Air Quality Related Values (AQRV) and PSD increment were applicable. AQRV are typically defined as visibility (both near-field plume impairment and/or regional haze) and acidic deposition. As previously discussed, there will be no signification increases of any visibility–affecting pollutants (NOx or PM) as a result of this modification. Thus, no visibility analysis is warranted. There are also no significant increases of any deposition-related pollutants (SO_2 or NO_X) expected as result of this modification. Therefore, no deposition analysis is required. Finally, there are no modeling related standards for VOCs (e.g. NAAQS or PSD increments). Therefore, no Class I or Class II area dispersion modeling analyses are required for this permit modification.

4.9. Additional Impact Analysis

PSD regulations [40 CFR 51.166(k)] also require a discussion of additional impacts and evaluation of potential impacts at Class I areas. The additional impact analysis generally has four parts as follows:

[6] Joseph Voelker (07/01/2016).

- Visibility impairment,
- Growth,
- Soils impacts, and
- Vegetation impacts.

Class I areas are federally protected areas for which more stringent air quality standards apply to protect unique natural, cultural, recreational, and/or historic values. The nearest Class I area is Swanquarter National Wilderness Area, which is located approximately 68 km southeast of the facility.

4.9.1 Visibility Impairment

Visibility impairment is primarily a function of PM and NOx emissions. Arauco is not subject to PSD review for any pollutants other than VOC, and emissions of PM and NOx are not changing as a result of the proposed modification. Because there are no increases of visibility-affecting pollutants, no visibility impairment is anticipated.

4.9.2 Growth Analysis

The growth analysis includes the projection of the associated industrial, commercial and residential source emissions that will occur in the area due to modification of the source. Arauco anticipated no new full-time employees will be hired at the Moncure facility as a result of this modification and minimal indirect jobs will be created in the supply chain of the mill. Additional growth will be minimal, if at all, as the existing facility infrastructure is already in place.

4.9.3 Soils and Vegetation Impact

The only potential impact on soils and vegetation resulting from the proposed project would be on long term damage associated with the elevated ozone levels. The effects of ozone on vegetation are well documented. Symptoms of ozone damage include reduction in growth rates, reduction in reproductive rates, direct foliar damage, and mortality.

VOCs are regulated because they can be a precursor to ozone formation. In addition to VOCs, an important component of ozone formation is the ambient concentration of NOx. Studies have shown that ozone formation in the southeast is NOx limited, meaning that ozone formation is limited by the amount of NOx in the atmosphere rather than the amount of VOCs. Because this permitting action will not increase NOx and the VOC emissions are expected to decrease upon installation of the biofilter, it is unlikely to impact the amount ozone formed and, consequently, it will not adversely affect vegetation in the surrounding area.

4.10 Public Participation Requirements

In accordance with 40 CFR 51.166(q), public participation, the reviewing authority (NCDAQ) shall meet the following:

1) Make a preliminary determination whether construction should be approved, approved with conditions, or disapproved.

This document satisfies this requirement providing a preliminary determination that construction should be approved consistent with the permit conditions described herein.

2) Make available in at least one location in each region in which the proposed source would be constructed a copy of all materials the applicant submitted, a copy of the preliminary determination, and a copy or summary of other materials, if any, considered in making the preliminary determination.

   This preliminary determination, application, and draft permit will be made available in the Raleigh Regional Office and in the Raleigh Central Office, with the addresses provided below.

Raleigh Regional Office	Raleigh Central Office
3800 Barrett Drive	217 West Jones Street
Raleigh, NC 27609	Raleigh, NC 27603

   In addition, the preliminary determination and draft permit will be made available on the NCDAQ public notice webpage.

3) Notify the public, by advertisement in a newspaper of general circulation in each region in which the proposed source would be constructed, of the application, the preliminary determination, the degree of increment consumption that is expected from the source or modification, and of the opportunity for comment at a public hearing as well as written public comment.

   The NCDAQ prepared a public notice (See Attachment 2) that will be published in a newspaper of general circulation in the region.

4) Send a copy of the notice of public comment to the applicant, the Administrator and to officials and agencies having cognizance over the location where the proposed construction would occur as follows: Any other State or local air pollution control agencies, the chief executives of the city and county where the source would be located; any comprehensive regional land use planning agency, and any State, Federal Land Manager, or Indian Governing body whose lands may be affected by emissions from the source or modification.

   The NCDAQ will send the public notice (See Attachment 2) to the Chatham County Manager at PO Box 1809, Pittsboro, NC 27312.

5) Provide opportunity for a public hearing for interested persons to appear and submit written or oral comments on the air quality impact of the source, alternatives to it, the control technology required, and other appropriate considerations.

   The NCDAQ public notice (See Attachment 2) provides contact information to allow interested persons to submit comments and/or request a public hearing.

5.0 Other Issues

5.1 Compliance

NCDAQ has reviewed the compliance status of this facility. The most recent inspection was completed on May 26, 2016. Steven Carr of the Raleigh Regional Office (RRO) indicated that the facility was in violation of several requirements, as discussed below in the compliance history. Additionally, a signed Title V Compliance Certification (Form E5) indicating that the facility was NOT in compliance with all applicable requirements was included with the permit application, received on January 30, 2017. The permit application also included Emission Source Compliance Schedule (Form E4) specifying steps necessary for the facility to return to compliance.

The following is the five-year compliance history for Arauco.

- A Notice of Violation / Notice of Recommendation for Enforcement (NOV/NRE) was issued on April 12, 2012. On March 15, 2012, Steve Carr of the RRO observed excess visible emissions from the PB Plant Dryer/Press exhaust stack and conducted a 30-minute EPA Reference Method 9 visible emissions test. Five (5) six-minute average opacity readings were 39%, 37%, 36%, 35% and 34%, respectively. These exceedances (>20% opacity) constituted four violations of the visible emissions standard, 15A NCAC 02D .0521 "Visible Emissions," as specified in Section 2.1 F.5.a. of Air Permit No. 03449T39. The Permittee also reported released emissions from the PB Plant Press (DEF-2010) bypassing the installed control devices (CD-PB-WESP, CD-PB-PGT) on two occasions in violations of "NESHAP for Plywood and Composite Wood Products," 40 CFR Part 63 Subpart DDDD.

- A NOV/NRE was issued on May 3, 2012. On March 28, 2012 and April 25, 2012, Steve Carr of the RRO visited Arauco to conduct compliance inspections. During these inspections, Mr. Carr discovered that at least seventy-two (thirty-six weekends) visible emission observations records (related to the Energy System at the MDF plant) were missing. Mr. Carr also discovered that one week and one month of visual inspection records associated with the PB plant and laminating mill were missing. In addition, Mr. Carr found two bagfilters that had missed annual internal inspections during 2011 and one month within the last year where a volatile organic compound work practice standard inspection was not documented.

- A Civil Penalty Assessment (CPA) in the amount of $20,774, including costs, was assessed on August 29, 2012 for the violations noted in the NOV/NREs dated April 12, 2012 and May 3, 2012. The CPA was paid in full on October 4, 2012.

- A NOV/NRE was issued on March 12, 2013. On January 31, 2013, the RRO received the second half 2012 semiannual report for Arauco. Additionally, Steven Carr from the RRO conducted a compliance inspection at Arauco on February 27, 2013. The violations as reported in the semiannual report and as observed during the compliance inspection are as follows:
  - Sections 2.1 B.2.c., 2.1 F.5.c., and 2.1 G.4.c. required the Permittee to perform weekly visible observations on emission points located at the MDF Mill, PB Mill, and Laminating Mill. According to the records, twenty-six (26) required visible emissions observations were not performed during the week of August 6, 2012. In addition, thirteen (13) required visible emissions observations were not performed during the week of June 28, 2012.
  - Section 2.1 C.3.c. required the Permittee to perform daily visible emissions observations of the energy system (ID No. ES-02-A) emission points. This stipulation allows three days of missed observations for every six-month period. According to the semiannual report, there were a total

of four days during the second 2012 semiannual period when the daily visible emissions observations were not performed.
  - Section 2.1 F.6.f. required the Permittee to perform weekly external visual inspections of the multicyclones (CD-1421, CD-1431). An external visual inspection was not performed during the week of August 6, 2012.
  - Section 2.1 .F.6.q. required the Permittee to perform weekly inspections of the burners, fans, blowers and process equipment associated with the PB dryers (ID Nos. 1420, 1430). According to the semiannual report, a weekly inspection was not performed during the week of August 6, 2012.
  - Section 2.1 .F.6.h. required the Permittee to operate the PB WESP (ID No. CD-PB-WESP) with a minimum of two functional fields. According to the semiannual report, there were three episodes lasting five minutes or more when the PB plant was running with only one WESP field operational.
  - Section 2.2 A.4.e. [referencing 40 CFR 63.6(e)(1)(i)] required the Permittee to operate all pollution control devices in a manner that minimizes emissions. According to the semiannual report, incidences had occurred during the second half of 2012 when control devices CD-PB-PGT, CD02, CD14, and CD16 were operated without sufficient reactant (hydrogen peroxide). Control device CD-PB-PGT operated approximately 0.25 hours without hydrogen peroxide on November 26, 2012. Control devices CD02, CD14, and CD16 operated approximately 2.83 hours on December 17, 2012 without hydrogen peroxide.

- A CPA in the amount of $23,574, including costs, was assessed on May 16, 2013 for the violations noted in the NOV/NRE dated March 12, 2013. The CPA was paid in full on June 14, 2013.

- A NOV was issued on October 23, 2015 for shut down of the PGT systems at the facility on September 10, 2015. With the shutdown of these systems, Arauco was in violation of 40 CFR Part 63, Subpart DDDD, "NESHAP for Plywood and Composite Wood Products." The Permittee has entered into SOC 2015-002 to address these violations.

- A NOV/NRE was issued on October 12, 2016 for violations observed during the May 2016 compliance inspection as well as numerous other violations, including the following:
  - A venturi scrubber (ID No. CD14) at the facility experienced periods of time when pressure drop readings and recirculating liquid flow rate levels fell below the limits stipulated in Section 2.1 C.1.f. of Air Permit No. 03449T45.
  - Visible emissions from the medium density fiberboard facility operations were logged as above normal for 25 times during the period of June 19, 2015 to February 4, 2016 with no subsequent follow up actions in violation of Section 2.1 C.2.c. of Air Permit No. 03449T45.
  - The Permittee is required to conduct annual internal inspections on the PB plant bagfilters in accordance with Section 2.1 E.2.c. Records/reports indicated that bagfilters (ID Nos. CD-3577, CD-3585, CD-3595, and CD-3577) did not receive an annual inspection for calendar year 2015.
  - Visible emissions from the PB mill operations were logged as above normal for 12 times during the period of October 2, 2015 to February 12, 2016 with no subsequent follow up actions in violation of Section 2.1 E.5.c. of Air Permit No. 03449T45.
  - Section 2.2 B.1.c. of the permit requires that 45% urea be injected into the Energy System (ID No. ES-02-A) at a minimum rate of 0.24 gallons per minute. The urea-injection rate monitoring records indicated that between November 6, 2015 and May 23, 2016, there were 335 three-hour block averages that fell below the minimum level.

- The above violations were not noted in the original second half 2015 semiannual report or the 2015 Annual Compliance Certification (ACC).

- A NOV/NRE was issued on April 20, 2017. The RRO received 2nd half 2016 semiannual report and 2016 ACC, which document the following violations:
  - Stipulation 2.1.E.2.c. required the Permittee to perform annual (once every 12 months) internal inspections on the particleboard plant (PB) bagfilters. The facility compliance reports indicated that Bagfilter CD- 2006 was inspected 14½ months after the prior inspection, and Bagfilter CD-3575 was inspected 18 months after the prior inspection
  - Stipulation 2.1.B.1.b. required the Permittee to perform annual (once every 12 months) internal inspections on the MDF plant bagfilters. The facility compliance reports indicated that Bagfilter CD-10 was not inspected during CY 2015.
  - Stipulation 2.1.E.6.q.ii. required the Permittee to perform annual (once every 12 months) internal inspections on the PB dryers for structural integrity. The facility compliance reports indicated that annual inspections were not performed on the ES-1420 CL dryer or ES-1430 SL dryer during CY 2015.
  - Stipulation 2.1.E.6.f. set operational and monitoring requirements for the PB WESP, including minimum 3-hour block averages for the secondary voltage, current, and water injection rate. The facility compliance reports indicated that there were 14 incidences during CY 2016 when these minimum 3-hour block averages were not met. The facility reports also indicated that there are 119 3-hour blocks of data missing for the WESP secondary voltage/current values during CY 2016.
  - Stipulation 2.2.B.1.c. required that 45% urea be injected into the Energy System (ES-02-A) at a minimum rate of 0.24 gallons per minute. The facility compliance reports indicated that there were three additional incidences (i.e., not accounted for in the October 12, 2016 NOV/NRE) where the three-hour block averages of urea injection fell below the minimum required level.
  - Stipulation 2.1.E.8.g. required the Permittee to perform an annual tune-up on the Wellons process heater (ES-3201). The facility compliance reports indicated that the Wellons was not tuned up per the requirements in this stipulation during CY 2015.
  - Stipulation 2.1.E.8.e. required the Permittee to submit a Notification of Compliance Status (NOCS) within 60 days after the initial tune-up and energy assessment was completed on the Wellons process heater. The NOCS was received on February 22, 2016 (15 days after the due date).
  - Stipulation 2.1.E.5.c required the facility to conduct weekly opacity observations on the PB plant emission points -- and take appropriate actions (as soon as possible) when above-normal emissions are noted -- or – conduct an EPA Method 9 visible emission evaluation (12 minutes). The purpose of these follow up actions is to either: 1) rectify the visible emission problem or 2) verify that the stack emission opacity is less than 20%. The 2016 ACC indicated that neither of these actions were taken following the opacity observations made during the week of January 29, 2016, where at least one opacity reading was logged as exceeding 20%.

- A CPA in the amount of $67,470, including costs, was assessed on June 13, 2017 for the violations noted in the NOV/NREs dated October 12, 2016 and April 20, 2017.

5.2 Zoning Requirements

A local zoning consistency determination is required. A determination from the Chatham County Planning Department was received on January 20, 2017, apart from the PSD permit application.

5.3 Professional Engineer's Seal

A Professional Engineer's seal was not included with the initial application, but this omission was corrected with an amended application received on February 13, 2017. John Bird, a Professional Engineer who is currently registered in the State of North Carolina, sealed the application for the portions containing the engineering plans, calculations, and all supporting documentation.

5.4 Application Fee

An application fee in the amount of $14,475.00 was received.

5.5 CAA Section 112(r)

The Permittee is not subject to Section 112(r) of the Clean Air Act requirements because it does not store any of the regulated substances in quantities above the thresholds in 112(r). This permit modification does not affect the 112(r) status of the facility.

6.0 Conclusion

Based on the application submitted and the review of this proposal, the NCDAQ is making a preliminary determination that the project can be approved and a revised permit issued. After consideration of all comments, a final determination will be made.

Attachment 1

Permit Condition for BACT for the MDF Plant

2. 15A NCAC 02D. 0530: PREVENTION OF SIGNIFICANT DETERIORATION

a. For PSD purposes, the following "Best Available Control Technology" (BACT) permit limitations shall not be exceeded for units in the MDF Facilities:

Table 2.2.B.2

Equipment/ Process	ID No.	Emission Limits*	Control Technology
MDF Facilities Operations			
Energy System	ES-02-A	2.88 lb WPP1** VOC/ODMT (24-hour average)	Biofilter (ID No. CD18)
Two Stage Boiler System with backup natural gas burners	ES-02-B ES-02-C ES-02-D	2.88 lb WPP1 VOC/ODMT (24-hour average)	
MDF Board Cooler and Press Hall	ES-06-B	2.88 lb WPP1 VOC/ODMT (24-hour average)	
MDF Press	ES-16	0.17 lb WPP1 VOC/MSF (24-hour average)	Biofilter (ID No. CD18)
MDF Woodworking Operations			
Fiber Sifter System	ES-03	0.082 lb WPP1 VOC//ODMT	None
Forming Line Clean-Up System	ES-04	0.082 lb WPP1 VOC//ODMT	
Mat Reject System	ES-05	0.082 lb WPP1 VOC//ODMT	
Saw System	ES-07	0.01 lb WPP1 VOC//MSF	
Sander System No. 1 (Primary sander)	ES-08	0.01 lb WPP1 VOC//MSF	
Sander System No. 2 (Finishing Sander)	ES-10	0.01 lb WPP1 VOC//MSF	
Recycled Fiber Silo No. 1	ES-09	0.082 lb WPP1 VOC//ODMT	
Recycled Fiber Silo No. 2	ES-15	0.082 lb WPP1 VOC//ODMT	
Sander Dust Silo No. 1	ES-12	0.268 lb WPP1 VOC//ODMT	
Sander Dust Silo No. 2	ES-17	0.268 lb WPP1 VOC//ODMT	
Dry Sawdust Silo Filter	ES-13	0.268 lb WPP1 VOC//ODMT	
Other Emission Sources in the MDF Plant			
Diesel Fuel-fired Emergency Generators	ES-21 I-DFP	Work practice standards and maintenance as required by 40 CFR 40 Part 63 Subpart ZZZZ and CFR 40 Part 60 Subpart IIII as applicable	None
Natural gas-fired hot oil heaters	ES-18, ES-19, ES-20	Proper design, maintenance, and operating practices	None
Gasoline storage tank Diesel storage tanks	I-Gas Not permitted	Proper design, maintenance, and operating practices	None

* BACT limits shall apply at all times. However, emissions resulting from startup, shutdown or malfunction as defined under 15A NCAC 02D .0535, exceeding the limits in condition a. above are permitted, provided that the Permittee, to the extent practicable, maintains and operates each emission source including any associated air pollution control equipment listed in this Table, in a manner consistent with good air pollution control practice for minimizing emissions.

** Wood Products Protocol 1 (WPP1) as provided in U.S. EPA, document entitled, "Interim VOC Measurement Protocol for the Wood Products Industry," July 2007.

Testing [15A NCAC 02Q .0508(f)]

b. If emissions testing is required, the testing shall be performed in accordance with General Condition JJ. If the results of this test exceed the limits given in Section 2.2 B.1.a. above, the Permittee shall be deemed in noncompliance with 15A NCAC 02D .0530.

c. Under the provisions of NCGS 143-215.108, the Permittee shall demonstrate compliance with the emission limits in Section 2.2 B.1.a for the MDF facilities operations in Table 2.2 B.1. Testing of the biofilter **(ID No. CD18)** shall be conducted in accordance with the following:
   i. The Permittee shall perform testing in accordance with 15A NCAC 02D .2600.
   ii. The Permittee shall establish a minimum and maximum biofilter bed temperature during testing, using procedures specified in 40 CFR 63.2262(m).
   iii. The energy system **(ID No. ES-02-A)**, the two-stage dryer system **(ID No. ES-02-B),** and the MDF Press **(ID No. ES-16**) shall be in operation during source testing. The Permittee shall be responsible for ensuring, within the limits of practicality, that the equipment or processes being tested are operated at or near their maximum normal production rate or at a lesser rate if specified by the Director or his delegate.
   iv. Testing shall be completed within 180 days of start-up of biofilter **(ID No. CD18)**.
   v. The Permittee shall submit a written report of the test(s) results to the Regional Supervisor, DAQ within 60 days of completion of the test.

   If the results of the tests are above any of the limits in Section 2.2 B.1.a above or if the testing is not conducted in accordance with Section 2.2 B.1.c, the Permittee shall be deemed in noncompliance with 15A NCAC 02D .0530.

Monitoring/Recordkeeping Requirements [15A NCAC 02Q .0508(f)]

d. The Permittee shall perform inspections and maintenance as recommended by the manufacturer, if any, for the MDF woodworking operations cited in Table 2.2.B.2. The results of inspection and maintenance activities for the MDF woodworking operations shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request. The logbook shall record the following:
   i. the monthly throughput for each emission source in either ODMT or MSF, as appropriate.
   ii. the results of any maintenance activities performed on the emission sources, including corrective actions.

   The Permittee shall be deemed in noncompliance with 15A NCAC 02D .0530 if these monitoring and recordkeeping activities are met.

e. The monitoring and recordkeeping requirements in Section 2.1 D.5.b and c **OR** Section 2.1 D.6. g through m, as applicable, shall be sufficient to ensure compliance with 15A NCAC 02D .0530 for the natural gas-fired hot oil heaters **(ID Nos. ES-18, ES-19, and ES-20)**. The Permittee shall be deemed in noncompliance with 15A NCAC 02D .0530 if these monitoring and recordkeeping requirements are not met.

f. The Permittee shall comply with the work practice standards and maintenance requirements and associated recordkeeping and reporting as required by 40 CFR 40 Part 63 Subpart ZZZZ and CFR 40 Part 60 Subpart IIII, as applicable, for the emergency diesel fuel-fired engines **(ID Nos. ES-21 and I-DFP).** The Permittee shall be deemed in noncompliance with 15A NCAC 02D .0530 if these monitoring and recordkeeping requirements are not met.

g. No monitoring or recordkeeping is required for VOC emissions from the MDF storage tanks cited in Table 2.2.B.2. above.

h. The Permittee shall conduct the following monitoring and recordkeeping activities for the MDF facilities operations in Table 2.2 B.2 above.
   i. The Permittee shall record the monthly throughput for each emission source in either ODMT or MSF, as appropriate.
   ii. The Permittee shall install and operate a continuous temperature monitoring system on the biofilter **(ID No. CD18)**. The continuous temperature monitor shall meet the requirements under 40 CFR 63.2269(a) and (b), as applicable.
   iii. The Permittee shall maintain the 24-hour block temperatures of the biofilter within the minimum and maximum bed temperatures established during testing **(ID No. CD18)** in accordance with Table 2 of 40 CFR Part 63 Subpart DDDD.
   iv. For biofilter bed temperature monitoring, the Permittee shall monitor and collect data according to 40 CFR 63.2270.

   The Permittee shall be deemed in noncompliance with 15A NCAC 02D .0530 if the biofilter bed temperature range is not maintained or if the monitoring and recordkeeping requirements are not performed.

Reporting Requirements [15A NCAC 02Q .0508(f)]

i. The Permittee shall submit the results of any maintenance performed on the biofilter **(ID No. CD18)** within 30 days of a written request by the DAQ.

j. The Permittee shall submit a summary report of monitoring and record keeping activities postmarked on or before January 30 of each calendar year for the preceding six-month period between July and December and July 30 of each calendar year for the preceding six-month period between January and June. All instances of deviations from the requirements of this permit must be clearly identified.

Attachment 2
Public Notice for Arauco Panels USA, LLC

PUBLIC NOTICE
PUBLIC NOTICE ON PRELIMINARY DETERMINATION REGARDING APPROVAL OF AN APPLICATION SUBMITTED UNDER THE "REGULATIONS FOR THE PREVENTION OF SIGNIFICANT DETERIORATION OF AIR QUALITY"

Arauco Panels USA, LLC has applied to the North Carolina Department of Environmental Quality, Division of Air Quality (DAQ), Permitting Section, for the installation of a biofilter as Best Available Control Technology on the dryer, energy system, board cooler, and press in the medium density fiberboard plant at its facility located at 985 Corinth Road, Moncure, North Carolina 27559, Chatham County.

The proposed project is subject to review and processing under North Carolina Administrative Code (NCAC), Title 15A, Subchapter 02D.0530, "Prevention of Significant Deterioration." The facility is defined as a "major stationary source" for the discharge of significant quantities of volatile organic compounds.

The Arauco Panels USA, LLC application has been reviewed by the DAQ, Major New Source Review Branch in Raleigh, North Carolina to determine compliance with the requirements of the North Carolina Environmental Management Commission air pollution regulations.

A preliminary review, including analysis of the impact of the facility emissions on local air quality, has led to the determination that the project can be approved, and the DAQ air permit issued, if certain permit conditions are met.

Wake County is classified as an attainment area. Compliance with all ambient air quality standards and the PSD increments is projected.

A copy of all data and the application submitted by Arauco Panels USA, LLC and other material used by the DAQ in making this preliminary determination are available for public inspection during normal business hours at the following locations:

NC DEQ Division of Air Quality New Source Review Branch 217 West Jones Street Raleigh, N.C. 27603	or	NC DEQ Division of Air Quality Raleigh Regional Office 3800 Barrett Drive Raleigh, NC 27609

Information on the proposed permit, the permit application, and the staff review is available by writing or calling:

William Willets, P.E.
Chief, Permitting Section
North Carolina Division of Air Quality
1641 Mail Service Center
Raleigh, North Carolina 27699-1641
Telephone: (919) 707-8726

After weighing relevant comments received by August 13, 2017, and other available information on the project, the DAQ will act on the PSD application.

Michael Abraczinskas, Director
Division of Air Quality, NCDEQ